

#### REMARKS

This Response is in reply to the Office Action mailed June 6, 2005. Claims 8-10,12,14-16,19,21-25,27-28 and 32-34 remain in the case. Reconsideration on the basis of the above amendments and remarks below is kindly requested.

Claims 8-10,12,14-15,19,21-25,27 and 32-34 are rejected under 35 U.S.C. §102 as being anticipated by Miekka. Claims 16 and 28 are rejected under 35 U.S.C. §103 as being unpatentable over Miekka in view of Delente.

A significant difference between the teachings of Miekka and the present invention is that the present invention generates CO<sub>2</sub> from an aqueous solution substantially without the use of acid, while Miekka utilizes acid for its CO<sub>2</sub> production. The independent claims of the present application have been amended to more particularly point out and claim this distinction.

Miekka teaches at cols. 3-4, lines 66-2, that "When carbon dioxide is needed, **a suitable acid 40** such as hydrochloric acid is introduced into canister 38. The **acid reacts with the limestone to release carbon dioxide 20.**" Applicant does not rely on the addition of acid as the principal way of generating carbon dioxide. Acid is dangerous and can cause severe burns to skin and eyes, or damage respiratory organs if inhaled, etc. It also requires the use of more expensive acid resistant containers, conduits and related use and storage components. In addition, facilities that use acid tend to pay higher insurance premiums.

The Examiner has cited Fig. 6 of Miekka as teaching acid free generation of CO<sub>2</sub>. It is clear from the description of Fig. 6, however, that the embodiment described in Fig. 6 **does indeed** use acid for CO<sub>2</sub> production. Col. 4, lines 46-50, states:

"Fig. 6 shows an apparatus for indirectly introducing carbon dioxide having a reduced concentration of radioactive carbon. **Carbon dioxide generator 19 produces carbon dioxide 20** which is substantially free of radioactive carbon."

Col. 3, lines 62 plus, defines carbon dioxide generator 19, stating:

"Fig. 3 show a **carbon dioxide generator 19 which produces carbon dioxide 20** ... . This generator consists of an acid resistant canister 38 which is filled with limestone 34 ... .

***When carbon dioxide is needed, a suitable acid 40 ... is introduced to the canister 38."***

It is clear from this description that the CO<sub>2</sub> is produced through the addition of acid to the canister. A compressor 78 is used to force this CO<sub>2</sub> into a cold water reservoir. As the water warms, it gives off the CO<sub>2</sub>. The CO<sub>2</sub> in the solution of Fig. 6 of Miekka was formed from acid-mediated decomposition of the limestone. CO<sub>2</sub> concentration is increased under pressure and the CO<sub>2</sub> is released or freed by heat energy (warming of the water). The present invention, in contrast, sources CO<sub>2</sub> for an aqueous solution substantially without the use of dangerous acids.

Independent claim 8 has been amended to recite, in addition to other limitations, the steps of:

***"adding a solid source of at least one of hydrogen carbonate ions and carbonate ions to said solution;  
causing, in said solution, the formation of carbon dioxide from said solid source of at least one of hydrogen carbonate ions and carbonate ions in a manner substantially without the addition of acid."***

Independent claim 15 has been amended to recite, in addition to other limitations, the step of:

***"forming carbon dioxide in said solution from said solid source of at least one of hydrogen carbonate ions and carbonate ions in a manner that is substantially free of the addition of acid to said solution."***

Independent claim 23 has been amended to recite, in addition to other limitations, the step of:

***"forming carbon dioxide in said solution from said solid source of at least one of hydrogen carbonate ions and carbonate ions in such a manner that does not include the substantial addition of acid to said solution"***

These claims specifically recite the formation of carbon dioxide from a solid source substantially without the use of acid. This limitation is not taught or suggested by Miekka or any combination of the cited references. ***For example, in Miekka, the formation or sourcing of the subject carbon dioxide in every embodiment can be traced to the use of acid.***

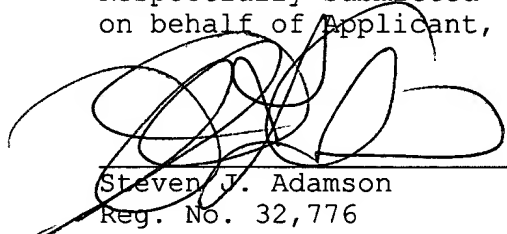
Due to this difference, among others, Applicant respectfully submits that the above independent claims are patentably distinct from the cited references.

Applicant further submits that the dependent claims are allowable due to their dependence from allowable independent claims and further due to the nonobvious combination of their respective limitations with those of their independent claim.

Accordingly, Applicant respectfully submits that Claims 8-10,12,14-16,19,21-25,27-28 and 32-34 are now in condition for allowance and early notification of same is respectfully requested. Should the Examiner believe that a telephone conference would help further the prosecution of this case, the Examiner is requested to contact the undersigned at the listed telephone number.

The Assistant Commissioner is hereby authorized to charge underpayment of any fees (including any filing fees under 37 C.F.R. \$1.16 for additional claims and any patent application processing fees under 37 C.F.R. \$1.17 including any fee for extension of time) associated with this communication or credit any overpayment to Deposit Account No. 01-0272. A duplicate copy of this authorization is enclosed.

Respectfully Submitted  
on behalf of Applicant,

A handwritten signature in black ink, appearing to read 'Steven J. Adamson', is written over a horizontal line. The signature is stylized with loops and flourishes.

Date: 9-2-05

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